

## **REMARKS**

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

### **Status of the claims**

Claims 14-31 are pending in the subject application. With this submission, no claims have been newly added or deleted; only claims 17-19 have been amended. Therefore, upon entry of this paper, claims 14-31 will remain pending and under active consideration.

### **Objection to the specification**

The decimal points have been replaced with commas where appropriate in the numbers recited on page 4, lines 16-19.

### **Objection to the claims**

The decimal points have been replaced with commas where appropriate in the numbers recited in claims 17-19.

### **Claim rejections under 35 U.S.C. § 103**

Claims 14-20 and 22-24 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over USP 5,453,456 to Mitra *et al.* (“Mitra”) in view of USP 5,674,935 to Evans *et al.* (“Evans”). The Examiner acknowledges that Mitra does not teach a poly(dialkylsiloxane) having terminal hydroxyl groups—as recited in the claims—and so introduces Evans to cure the deficiency. However, Applicants respectfully submit that the combination of Mitra and Evans is improper at least because one of ordinary skill would not have determined the two references as analogous art. In any event, even if the combination is maintained, Applicants respectfully submit that the cited references still fail to teach or suggest the claimed invention. Applicants thus respectfully traverse the rejection.

As discussed in pages 1-2 of the application, glass ionomer cements (“GIC”) were widely used in clinical and dental applications as a permanent *filling* material. However,

dental fillings made of the known GIC's suffered several disadvantages including, for example, insufficient strength, stiffness, hardness and poor solubility properties. More specifically, the surface of these fillings were not desirably smooth, had relatively low wear resistance, and required considerable curing time for acquiring an acceptable strength. As noted in the specification (page 1, paragraph 2), it is these dental *fillings* that Mitra teaches.

The present invention, however, is not directed to dental fillings at all. Rather, the invention is predicated on a discovery that when a dental cavity is already filled with a conventional GIC—as taught, for example, by Mitra—if the *surface* of that filling is subsequently treated with a poly(dialkyl)siloxane, the resulting dental filling exhibits, among other improved properties, enhanced surface strength.

No where in Mitra is it taught to treat already formed dental fillings, let alone the surface of dental fillings. What is more, Mitra is entirely silent on the specific use of poly(dialkyl)siloxane(s) having terminal hydroxyl groups for the claimed treatment.

In this respect, furthermore, Evans is of no avail. First, the term “silica filler” as used throughout Evans does not relate to GICs, but to fillers in fluorosilicone and silicone elastomer compositions. “Silica fillers” are finely divided silicon dioxide particles having terminal hydroxyl groups (due to absorption of water), and therefore do not have the capacity to bond to enamel and dentine like GICs. *Evans*, column 5, lines 12 – 41. Hence, the teachings of Evans cannot reasonably extend to the general field of dentistry, let alone the treatment of a surface of a dental filling.<sup>1</sup>

Second, *GIC* compositions are chemically different from “silica fillers.” Specifically, the polysiloxanes of Evans comprise “a silanol-terminated, *vinyl*-containing polydiorganosiloxane,” whereas the GICs recited in the claims, comprise *dialkyl*siloxanes.<sup>2</sup> Abstract (emphasis added).

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<sup>1</sup> In fact, the polysiloxanes of Evans require a reaction temperature of about 60° to about 200°C, which is impossible to obtain in a patient’s mouth as a practical matter. Column 6, lines 11 – 29.

<sup>2</sup> Should it concern the Examiner, the use of an unsaturated moiety such as a vinyl allows Evans’ silica fillers to “function[] *both* as a processing aid and as a crosslinking agent.” Abstract (emphasis added); column 5,

For at least these reasons, Applicants respectfully submit that the combination of references, if not improper at the outset, fails to render the claimed invention obvious. Indeed, the Office must articulate some reason one of ordinary skill in the art would have found it obvious to modify the teachings of the art (*e.g.*, dental *fillings*) to arrive at the claimed invention (*i.e.*, treatment of the *surface* of dental fillings). This, the Office has not done, and so Applicants respectfully request the withdrawal of the subject rejection.

Claims 21 and 25-31 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Mitra in view of Evans, when taken with USP 5,063,257 to Akahane *et al.* (“Akahane”) (claim 21); US 2002/0129736 to Bui *et al.* (“Bui”) (claim 27); and/or US 2003/0087986 to Mitra (“Mitra II”) (claim 28). The reasons for the rejections are set forth on pages 4-10 of the outstanding Office Action. Applicants respectfully traverse these rejections, in part, for the reasons expounded above. Neither Mitra nor Evans teaches the treatment of a surface of dental fillings comprising a GIC composition with a poly(dialkylsiloxane) having terminal hydroxyl groups, wherein the alkyl groups contain 1 to 4 carbon atoms. Akahane, Bui, and Mitra II fail to cure this deficiency. Bui, for example, suggests that thermal curing is beneficial for initiating polymerizations “outside of the oral environment” ([0054]), but the claimed invention necessarily must take place *inside* the oral environment (*i.e.*, upon the surface of a tooth having been filled).

Hence, Applicants respectfully request the withdrawal of these rejections.

### **Double patenting**

Claims 14, 20 and 29-31 stand provisionally rejected on the ground of non-statutory obviousness-type double patenting over claims 1, 9, and 11-14 of co-pending application no. 10/559,900 for the reasons of record. Applicants respectfully disagree with this rejection, but in any event, request that the Examiner hold this “provisional” rejection in abeyance until claims are otherwise found allowable in the present case or patented in the co-pending case. *See* M.P.E.P. § 804 (I)(B).

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lines 42 – 45; column 6, lines 41 - 45. The use of saturated alkyl groups as in the claimed invention, however, does not permit, *e.g.*, crosslinking.

## Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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By 

FOLEY & LARDNER LLP  
Customer Number: 22428  
Telephone: (202) 295-4621  
Facsimile: (202) 672-5399

Gilberto M. Villacorta, Ph.D.  
Registration No. 34,038  
Sunit Talapatra, Ph.D.  
Registration No. 54,482